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(58) Field of search

B8C

E2A

Selected US specifications from IPC sub-class

B65B

## (54) Closing bags

(57) A plastics bag is closed by a plastics clip having opposite ends 12,14 (Fig.1) arranged to interengage and lock together, using an applicator apparatus having a channel 1a into which the neck of the bag is pushed in order to confine it, the clip being received between two pivotal fingers 4 of an assembly 3,4 which is then advanced to place the clip around the neck of the bag, and to cause the fingers 4 on abutment with rotatable cams 5 to close together and urge the ends of the clip into locking engagement. The clip and apparatus for applying it have utility for packing frozen chickens. The strap portion 10 of the clip is provided with a flat identifying flag 18 projecting therefrom.

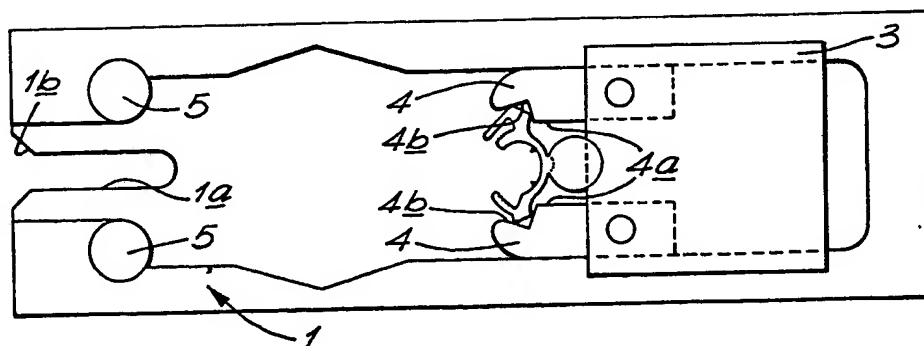


FIG. 3.

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FIG.1.

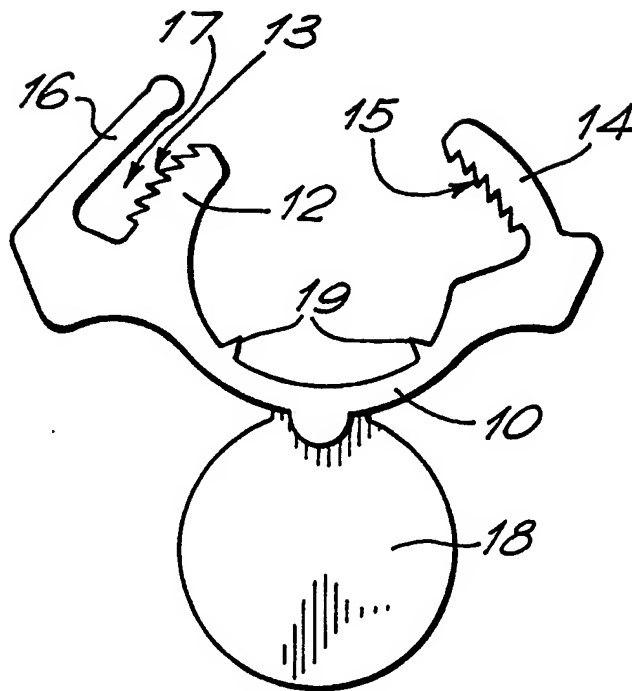
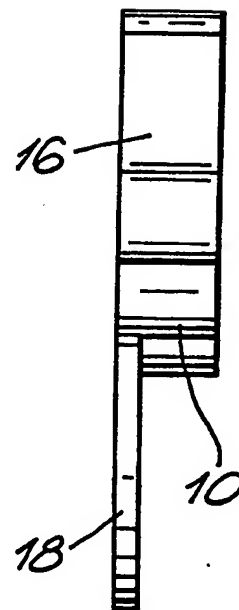


FIG.2.



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FIG.3.

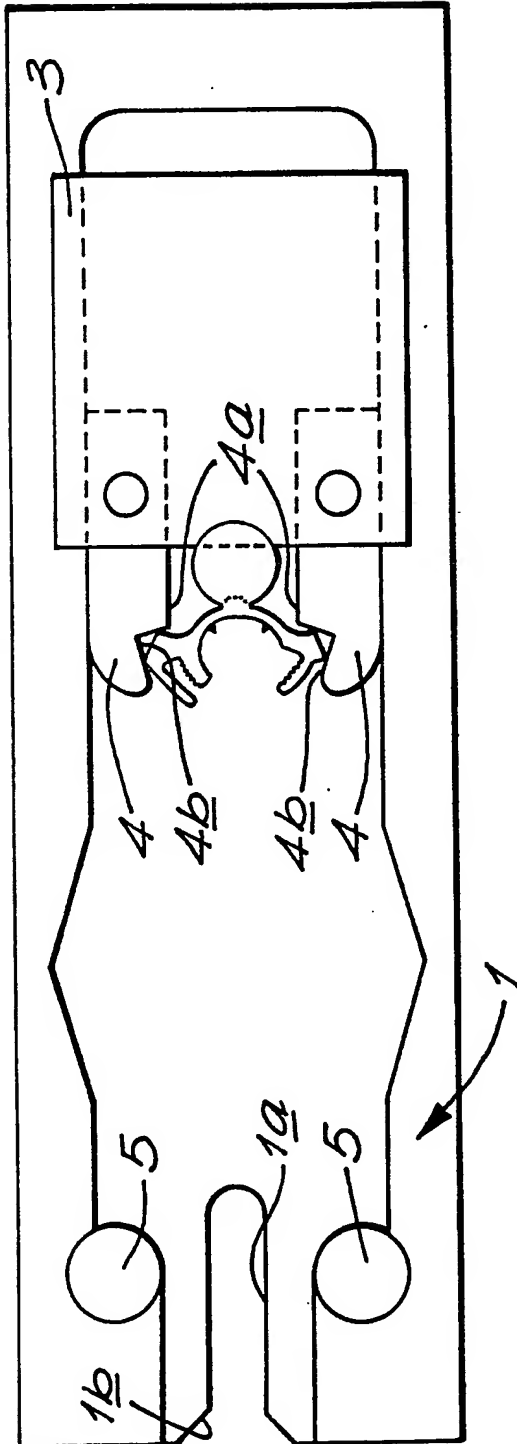
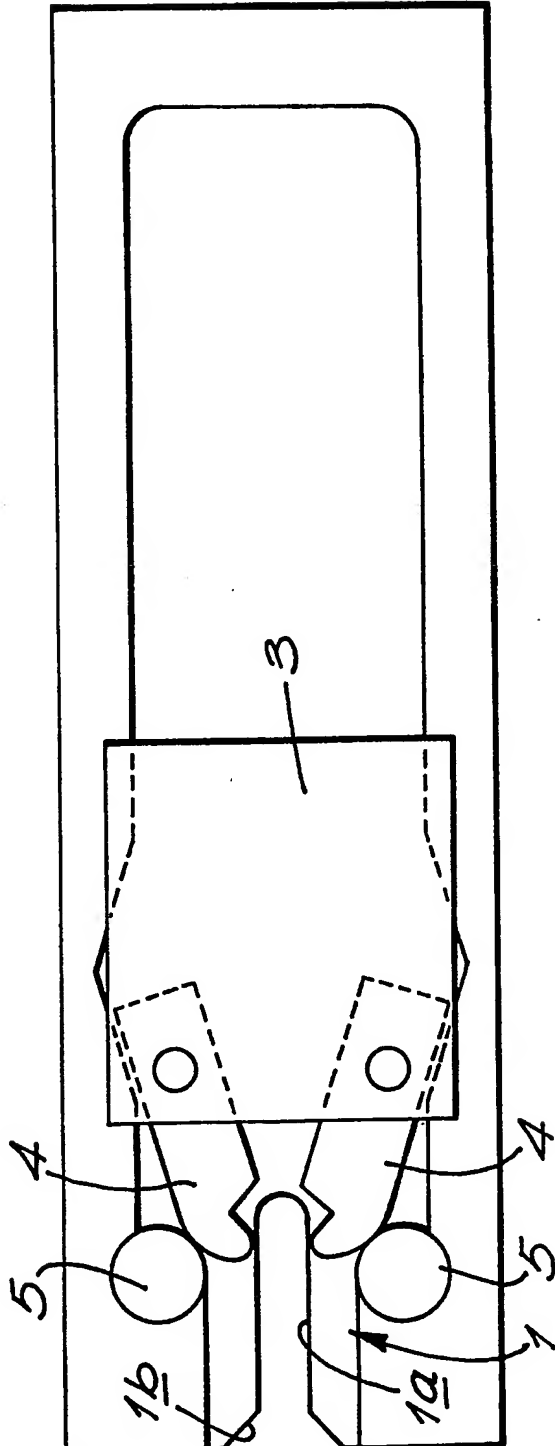


FIG.4.



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BAG CLOSING ARRANGEMENTS

This invention relates to arrangements for closing the neck of an e.g. plastics bag using a plastics clip.

One field in which plastics bags must be closed at their necks is the frozen chicken market. At present, it is usual for the packer to close the neck of the bag, once the chicken or other poultry has been placed in the bag, using a metal hog ring.

We have now devised arrangements for closing the neck of a plastics or other bag using a plastics clip. This avoids the use of a metal clip (which is becoming increasingly regarded as undesirable in food packaging). Further, the plastics clip may be arranged to carry a marking identifying e.g. the packing station.

Thus in accordance with this invention there is provided an applicator apparatus for applying a plastics clip around the neck of a bag, the apparatus comprising means for receiving and confining the bag at its neck, a station for receiving a generally U-shaped plastics clip having its ends arranged for locking interengagement, and means for engaging the clip when in said receiving station and for closing the clip about the neck of the bag so that its ends engage and lock together.

The applicator apparatus may include a channel into which the neck of the bag may be pushed in order to confine the neck. The clips may be fed one-by-one to the clip-receiving station from a magazine of such clips. The

applicator may further include a pair of spaced fingers which, upon advancing, serve to push the clip around the neck of the bag and to close the ends of the clip together and into locking engagement.

5           The clip may be formed with an integral, flat projecting portion arranged to receive an identifying mark. Thus, also in accordance with this invention, there is provided a plastics clip, of generally U-shape and having two opposite end portions joined by a flexible strap portion  
10           and arranged to interengage and lock together, and a flat portion for receiving an identifying mark, which flat portion projects from said strap portion.

          Further in accordance with this invention, there is provided a method of closing a bag, comprising the steps of  
15           receiving and confining the neck of the bag, receiving a generally U-shaped plastics clip having its ends arranged for locking interengagement, and closing the clip about the neck of the bag so that its ends engage and lock together.

          Embodiments of this invention will now be described  
20           by way of example only and with reference to the accompanying drawings, in which:

          FIGURE 1 is a plan view of a plastics clip for use in closing the neck of an e.g. plastics bag;

          FIGURE 2 is a side view of the clip;

25           FIGURE 3 is a plan view of an applicator apparatus for applying the clip around the neck of a bag, the applicator being in its retracted position; and

          FIGURE 4 is a similar view of the apparatus with its applicator in the extended position.

30           Referring to Figures 1 and 2, the clip comprises a generally C-shaped flexible strap portion 10 having opposite end portions arranged for locking interengagement. Thus, one end of the strap portion 10 has an extension 12 formed with teeth 13 on its radially outer surface, whilst  
35           the other end of the strap portion has an extension 14

formed with teeth 15 on its radially inner surface and to interengage with the teeth 13 of extension 12. An arm 16 extends from the one end of strap portion 10 parallel to and spaced radially outwardly from extension 12, providing a slot 17 for receiving the extension 14. A flat, circular flag 18 projects radially outwardly from the strap portion 10 half-way along the latter, and in the plane of the clip. This flag 18 serves to receive identifying marking.

Referring to Figures 3 and 4, the applicator apparatus for applying the clip to a bag comprises a body member 1 having an elongate slot or channel 1a, which is flared at its entry 1b. The apparatus further comprises an e.g. pneumatic cylinder actuator (not shown) serving to move an assembly 3,4 both forwards and backwards along an axis of the body 1, which axis extends along the centre line of the slot 1a. At its forward end, the assembly 3,4 carries a pair of transversely-spaced pivoted fingers 4: these have inner surfaces 4a which are parallel to each other, and indented surfaces 4b adjacent their outer ends. The apparatus further comprises a pair of fixed circular rotatable cams 5 mounted to the body 1 either side of the slot 1a. The apparatus further comprises a magazine (not shown) of clips as shown in Figures 1 and 2, for feeding clips one-at-a-time to a position on body 1 and between the fingers 4 when retracted as shown in Figure 3.

In use, once a bag has been filled and requires closing, the neck of the bag is pushed by the packer into and along the slot 1a and this step in itself serves to confine the neck of the bag. Next the actuator is operated to advance the assembly 3,4, pushing the clip forward and around the neck of the bag, and further causing the curved outer surface of the fingers 4 to bear on the cams 5. This causes the fingers 4 to pivot and close together, as shown in Figure 4, thus bearing on the opposite sides of the clip,

which has now been advanced to a position between the cams,  
to push the ends of the clip together so closing the clip  
around the neck of the bag and locking these ends of clip  
together. The actuator then returns the assembly 3,4 to  
5 its original position and the closed bag is removed from  
the slot 1a, ready for the next clip to be fed into  
position from the magazine and then the next bag to be  
closed in the same manner. It will be seen that the fingers  
4 slide again along parallel slide surfaces 1c of the body  
10 member 1 to keep them parallel to each other, these surfaces  
being recessed at 1d to allow the required pivoting movement  
of the fingers as they approach their extended position.

The clip may be provided with one or more inwardly-  
directed teeth 19 on the inner face of its strap portion 10,  
15 as shown in Figure 1. These serve to restrict rotational  
and/or longitudinal movement of the clip relative to the bag,  
should this be necessary, and may also extend the range of  
thickness of the bag neck which the clip can accommodate.

CLAIMS

1. An applicator apparatus for applying a plastics clip around the neck of a bag, the apparatus comprising means for receiving and confining the bag at its neck, a station for receiving a generally U-shaped plastics clip  
5 having its ends arranged for locking interengagement, and means for engaging the clip when in said receiving station and for closing the clip about the neck of the bag so that its ends engage and lock together.

2. An applicator apparatus as claimed in claim 1, in  
10 which said receiving and confining means comprises a body provided with a channel into which the neck of the bag may be pushed in order to confine its neck.

3. An applicator apparatus as claimed in claim 1 or 2, in which said clip engaging means comprises a displaceable  
15 assembly for advancing to push the clip into a position around the neck of the bag and then to urge the ends of the clip together.

4. An applicator apparatus as claimed in claim 3, in which said assembly comprises a pair of jaws for closing  
20 together to urge the ends of the clip together.

5. An applicator apparatus as claimed in claim 4, in which said jaws are arranged to bear against fixed cams upon advancement of said assembly to close said jaws together.

25 6. An applicator apparatus as claimed in any preceding claim, comprising means for feeding said clips one-by-one to said clip-receiving station.



7. An applicator apparatus for applying a plastics clip around the neck of a bag, the apparatus being substantially as herein described with reference to Figures 3 and 4 of the accompanying drawings.

5           8. A plastics clip for applying around the neck of a bag using an applicator apparatus as claimed in claim 1, the clip being of generally U-shape and having two opposite end portions joined by a flexible strap portion and arranged to interengage and lock together, and a flat  
10       portion for receiving an identifying mark, which flat portion projects from said strap portion.

          9. A plastics clip for applying around the neck of a bag using an applicator apparatus as claimed in claim 1, the plastics clip being substantially as herein described  
15       with reference to Figures 1 and 2 of the accompanying drawings.

          10. A method of closing a bag, comprising the steps of receiving and confining the neck of the bag, receiving a generally U-shaped plastics clip having its ends arranged  
20       for locking interengagement, and closing the clip about the neck of the bag so that its ends engage and lock together.

          11. A method of closing a bag, said method being as claimed in claim 1 and substantially as herein described  
25       with reference to the accompanying drawings.

          12. A bag when closed by a plastics clip by the method of claim 10 or 11.